REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-14 are active in the present application, Claims 1, 7, 8 and 14 having been amended by the present amendment and Claims 15-20 having been withdrawn from consideration as directed to a non-elected invention.

In the outstanding Official Action, Claims 1-3, 5, 7-10, 12 and 14 were rejected under 35 USC §102(e) as anticipated by Horikawa (2002/0135030 A1).

In light of the outstanding ground for rejection, Claim 1 has been amended to clarify that the "first gate insulating film" contains boron, and the "second gate insulating film" substantially contains no boron. Similarly, Claim 8 has been amended to clarify that the "first gate insulating film" contains substantially no arsenic, and the "second gate insulating film" contains arsenic. Exemplary embodiments of these features are disclosed in the specification, where it is noted:

> The gate insulating film 13 of the n-type MISFET 3 is made of hafnium silicate (HfSiON) including boron (B). As will be explained in full detail later, boron included in the gate insulating film 13 has come from the gate electrode 15. By incorporating boron and hafnium in the gate insulating film 13, positive charge can be generated therein. On the other hand, the gate insulating film 23 of the p-type MISFET 5 is made of hafnium silicate which does not substantially include boron.[1] ...
>
> In another example of the first embodiment of the invention, the gate insulating film 13 of the n-type MISFET 3 may be made of hafnium silicate (HfSiON) including arsenic (As). As will be explained in full detail later, arsenic included in the gate insulating film 13 has come from the gate electrode 15. By incorporating arsenic and hafnium in the gate insulating film 13, negative charge can be generated therein. On the other hand, the gate insulating film 23 of the p-type MISFET 5 is made of hafnium silicate which does not substantially include arsenic.[2] ...

[1] Specification, page 12, lines 11-26.
[2] Id., page 16, lines 3-13.

It is respectfully submitted that none of the cited references teaches or suggests such unique features. On the contrary, the cited Horikawa reference merely lists oxides such as Al_2O_3, Y_2O_3 and La_2O_3, and metal ions such as Ti, Zr, Hf, Nb and Ta for the gate insulating films of n-type and p-type MISFETs. However, Horikawa does not teach or suggest to incorporate boron or arsenic into one of the gate insulating films of an n-type FET and a p-type FET.

As disclosed in Applicants' specification,

> ...By incorporating boron and hafnium in the gate insulating film 13, positive charge can be generated therein. On the other hand, the gate insulating film 23 of the p-type MISFET 5 is made of hafnium silicate which does not substantially include boron.
>
> By generating positive charge by incorporating boron and hafnium in the gate insulating film 13, the threshold of the n-type MISFET 3 can be appropriately adjusted. As a result, the thresholds of the n-type MISFET 3 and the p-type MISFET 5 maybe appropriately balanced.[3] ...
>
> Therefore, it is considered that boron in the Si electrode moves into the gate insulating film, positive charge is generated by the coupling of Hf and boron (B) in the gate insulating film, and this positive charge change the Vfb. This is occurred with the mechanism that the gate insulating film is positively charged since the numbers of bonding hands of Hf in group IV elements and that of boron (B) in group III elements are different from each other and one bonding hand of Hf remains unbonded. The threshold values of two transistors can be made into a suitable value by forming the hafnium-boron (HfB) compound only in the n-type MISFET and using the same metal for the gate electrodes of two transistors using this phenomenon.[4] ...
>
> By incorporating arsenic and hafnium in the gate insulating film 13, negative charge can be generated therein.
>
> On the other hand, the gate insulating film 23 of the p-type MISFET 5 is made of hafnium silicate which does not substantially include arsenic. By generating negative charge by incorporating arsenic and hafnium in the gate insulating film 13, the threshold of the p-type MISFET 5 can be appropriately adjusted. As a result, the thresholds of the n-type MISFET 3 and the p-type MISFET 5 may be appropriately balanced.[5]

Thus, as is evident from Applicants' disclosure, according to the claimed inventions recited in amended Claims 1 and 8, by selectively incorporating boron or arsenic into the gate

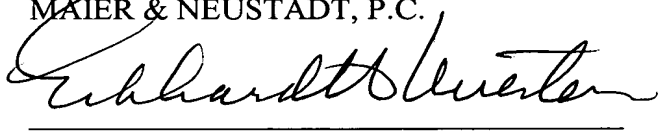
[3] Id., page 12, line 21 - page 13, line 6.
[4] Id., page 13, line 23, - page 14, line 10.
[5] Id., page 16, lines 8-19.

insulating films, the thresholds of the n-type MISFET and p-type MISFET can be appropriately balanced. No such teachings are believed to be evident in the cited prior art and therefore it is respectfully submitted that the outstanding ground for rejection has been overcome.

Consequently, in view of the present amendment and in light of the above comments, the pending claims are believed to be patentably distinguishing over the prior art of record and in condition for formal allowance. An early and favorable action to that effect is therefore respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

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